

**What is claimed is:**

1. System for controlling a fueling governor for an internal combustion engine, the system comprising:

5 a vehicle speed sensor producing a vehicle speed signal indicative of road speed of a vehicle carrying an internal combustion engine;

a fuel system responsive to a fueling signal to supply fuel to said engine; and

10 a control computer including a fueling governor producing said fueling signal as a function of a throttle command and a measured engine speed value, said governor defining an engine speed difference between a first value of said fueling signal corresponding to a no-load fueling condition and a second value of said fueling signal corresponding to a full-load fueling condition for any constant throttle command value, said control computer modifying said engine speed difference as a continual function of said vehicle speed signal.

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2. The system of claim 1 wherein said control computer is operable to increase said engine speed difference as said road speed decreases and to decrease said engine speed difference as said road speed increases.

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3. The system of claim 1 further including means for determining a gear ratio of a transmission coupled to said engine and producing a gear ratio value corresponding thereto;

wherein said control computer is further operable to modify said engine speed difference as a function of said gear ratio signal.

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4. The system of claim 1 further including means for determining one of a mass and a weight of said vehicle and producing a corresponding mass or weight value;

and wherein said control computer is operable to modify said engine speed difference as a function of said mass or weight value.

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5. The system of claim 1 wherein said control computer is operable to determine a vehicle acceleration value as a function of said vehicle speed signal; and wherein said control computer is operable to modify said engine speed difference as a function of said vehicle acceleration value.

6. The system of claim 1 further including means for determining a condition of a road traveled by said vehicle and producing a road condition signal corresponding thereto;

10 wherein said control computer is operable to modify said engine speed difference as a function of said road condition signal.

7. The system of claim 6 wherein said condition of a road traveled by said vehicle corresponds to a grade of said road, said road condition signal corresponding to a road grade signal.

8. The system of claim 6 wherein said condition of a road traveled by said vehicle corresponds to a surface condition of said road, said road condition signal corresponding to a road surface condition signal.

20 9. The system of claim 1 further including an engine speed sensor producing an engine speed signal indicative of a rotational speed of said engine, said control computer processing said engine speed signal to determine said measured engine speed value.

25 10. The system of claim 9 further including means for producing said throttle command, said throttle command corresponding to a fueling request.

30 11. System for controlling a fueling governor for an internal combustion engine, the system comprising:

means for determining a gear ratio of a transmission coupled to an internal combustion engine and producing a gear ratio value corresponding thereto;  
a fuel system responsive to a fueling signal to supply fuel to said engine; and  
a control computer including a fueling governor producing said fueling signal as a  
5 function of a throttle command and a measured engine speed value, said governor  
defining an engine speed difference between a first value of said fueling signal  
corresponding to a no-load fueling condition and a second value of said fueling signal  
corresponding to a full-load fueling condition for any constant throttle command value,  
said control computer modifying said engine speed difference as a function of said gear  
10 ratio value.

12. The system of claim 11 wherein said control computer is operable to  
increase said engine speed difference as said gear ratio value increases and to  
decrease said engine speed difference as said gear ratio value decreases.

13. The system of claim 11 further including means for determining one of a  
mass and a weight of a vehicle carrying said engine and producing a corresponding  
mass or weight value;

and wherein said control computer is operable to modify said engine speed  
difference as a function of said mass or weight value.

14. The system of claim 11 further including means for determining an  
acceleration rate of a vehicle carrying said engine;

and wherein said control computer is operable to modify said engine speed  
difference as a function of said acceleration rate.

15. The system of claim 11 further including means for determining a  
condition of a road traveled by a vehicle carrying said engine and producing a road  
condition signal corresponding thereto;

wherein said control computer is operable to modify said engine speed difference as a function of said road condition signal.

16. The system of claim 15 wherein said condition of a road traveled by said vehicle corresponds to a grade of said road, said road condition signal corresponding to a road grade signal.

17. The system of claim 15 wherein said condition of a road traveled by said vehicle corresponds to a surface condition of said road, said road condition signal corresponding to a road surface condition signal.

18. The system of claim 11 further including an engine speed sensor producing an engine speed signal indicative of a rotational speed of said engine, said control computer processing said engine speed signal to determine said measured engine speed value.

19. The system of claim 18 further including means for producing said throttle command, said throttle command corresponding to a fueling request.

20. System for controlling a fueling governor for an internal combustion engine, the system comprising:

means for determining one of a mass and a weight of a vehicle carrying an internal combustion engine and producing a corresponding mass or weight value; a fuel system responsive to a fueling signal to supply fuel to said engine; and a control computer including a fueling governor producing said fueling signal as a function of a throttle command and a measured engine speed value, said governor defining an engine speed difference between a first value of said fueling signal corresponding to a no-load fueling condition and a second value of said fueling signal corresponding to a full-load fueling condition for any constant throttle command value,

said control computer modifying said engine speed difference as a function of said mass or weight value.

21. The system of claim 20 wherein said control computer is operable to  
5 increase said engine speed difference as said mass or weight value decreases and to  
decrease said engine speed difference as said mass or weight value increases.

22. The system of claim 20 further including means for determining an acceleration rate of said vehicle;

10 and wherein said control computer is operable to modify said engine speed  
difference as a function of said acceleration rate.

23. The system of claim 20 further including means for determining a condition of a road traveled by said vehicle and producing a road condition signal corresponding thereto;

wherein said control computer is operable to modify said engine speed difference as a function of said road condition signal.

24. The system of claim 23 wherein said condition of a road traveled by said  
20 vehicle corresponds to a grade of said road, said road condition signal corresponding to  
a road grade signal.

25. The system of claim 23 wherein said condition of a road traveled by said vehicle corresponds to a surface condition of said road, said road condition signal corresponding to a road surface condition signal.

26. The system of claim 20 further including an engine speed sensor producing an engine speed signal indicative of a rotational speed of said engine, said control computer processing said engine speed signal to determine said measured engine speed value.

27. The system of claim 26 further including means for producing said throttle command, said throttle command corresponding to a fueling request.

5 28. System for controlling a fueling governor for an internal combustion engine, the system comprising:

means for determining a condition of a road traveled by a vehicle carrying an internal combustion engine and producing a corresponding road condition signal; a fuel system responsive to a fueling signal to supply fuel to said engine; and  
10 a control computer including a fueling governor producing said fueling signal as a function of a throttle command and a measured engine speed value, said governor defining an engine speed difference between a first value of said fueling signal corresponding to a no-load fueling condition and a second value of said fueling signal corresponding to a full-load fueling condition for any constant throttle command value, said control computer modifying said engine speed difference as a function of said road condition signal.

15 29. The system of claim 28 wherein said condition of a road traveled by said vehicle corresponds to a grade of said road, said road condition signal corresponding to a road grade signal.

20 30. The system of claim 29 wherein said control computer is operable to increase said engine speed difference as said grade of said road decreases if said grade of said road indicates an incline, and to decrease said engine speed difference as said grade of said road increases if said grade of said road indicates an incline.

25 31. The system of claim 28 wherein said condition of a road traveled by said vehicle corresponds to a measure of roughness of said road, said road condition signal increasing in value as said measure of roughness of said road increases.

32. The system of claim 31 wherein said control computer is operable to increase said engine speed difference as said road condition signal increases and to decrease said engine speed difference as said road condition signal decreases.

5           33. The system of claim 28 further including means for determining an  
acceleration rate of said vehicle;

and wherein said control computer is operable to modify said engine speed difference as a function of said acceleration rate.

10 34. The system of claim 28 further including an engine speed sensor  
producing an engine speed signal indicative of a rotational speed of said engine, said  
control computer processing said engine speed signal to determine said measured  
engine speed value.

35. The system of claim 34 further including means for producing said throttle command, said throttle command corresponding to a fueling request.

36. System for controlling a fueling governor for an internal combustion engine, the system comprising:

20 a vehicle speed sensor producing a vehicle speed signal indicative of road speed of a vehicle carrying and internal combustion engine;

21 a fuel system responsive to a fueling signal to supply fuel to said engine; and

22 a control computer including a fueling governor producing said fueling signal as a function of a throttle command and a measured engine speed value, said governor having at least one gain value associated therewith defining a responsiveness of said governor to changes in said throttle command to effectuate corresponding changes in said measured engine speed value via control of said fueling signal, said control computer modifying said at least one gain value as a continual function of said vehicle speed signal.

37. The system of claim 36 wherein said control computer is operable to modify said at least one gain value to increase said responsiveness of said governor as said road speed increases and to modify said at least one gain value to decrease said responsiveness of said governor as said road speed decreases.

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38. The system of claim 36 further including means for determining a gear ratio of a transmission coupled to said engine and producing a gear ratio value corresponding thereto;

wherein said control computer is further operable to modify said at least one gain value as a function of said gear ratio signal.

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39. The system of claim 36 further including means for determining one of a mass and a weight of said vehicle and producing a corresponding mass or weight value;

and wherein said control computer is operable to modify said at least one gain value as a function of said mass or weight value.

40. The system of claim 36 wherein said control computer is operable to determine a vehicle acceleration value as a function of said vehicle speed signal;

and wherein said control computer is operable to modify said at least one gain value as a function of said vehicle acceleration value.

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41. The system of claim 36 further including means for determining a condition of a road traveled by said vehicle and producing a road condition signal corresponding thereto;

wherein said control computer is operable to modify said at least one gain value as a function of said road condition signal.

42. The system of claim 41 wherein said condition of a road traveled by said vehicle corresponds to a grade of said road, said road condition signal corresponding to a road grade signal.

5 43. The system of claim 41 wherein said condition of a road traveled by said vehicle corresponds to a surface condition of said road, said road condition signal corresponding to a road surface condition signal.

10 44. The system of claim 36 further including an engine speed sensor producing an engine speed signal indicative of a rotational speed of said engine, said control computer processing said engine speed signal to determine said measured engine speed value.

15 45. The system of claim 44 further including means for producing said throttle command, said throttle command corresponding to a fueling request.

46. System for controlling a fueling governor for an internal combustion engine, the system comprising:

20 means for determining a gear ratio of a transmission coupled to an internal combustion engine and producing a gear ratio value corresponding thereto; a fuel system responsive to a fueling signal to supply fuel to said engine; and 25 a control computer including a fueling governor producing said fueling signal as a function of a throttle command and a measured engine speed value, said governor having at least one gain value associated therewith defining a responsiveness of said governor to changes in said throttle command to effectuate corresponding changes in said measured engine speed value via control of said fueling signal, said control computer modifying said at least one gain value as a function of said gear ratio value.

30 47. The system of claim 46 wherein said control computer is operable to modify said at least one gain value to increase said responsiveness of said governor as

1 said gear ratio value decreases and to modify said at least one gain value to decrease  
2 said responsiveness of said governor as said gear ratio value increases.

5 48. The system of claim 46 further including means for determining one of a  
mass and a weight of a vehicle carrying said engine and producing a corresponding  
mass or weight value;

10 and wherein said control computer is operable to modify said at least one gain  
value as a function of said mass or weight value.

15 49. The system of claim 46 further including means for determining an  
acceleration rate of a vehicle carrying said engine;

20 and wherein said control computer is operable to modify said at least one gain  
value as a function of said acceleration rate.

25 50. The system of claim 46 further including means for determining a  
condition of a road traveled by a vehicle carrying said engine and producing a road  
condition signal corresponding thereto;

30 wherein said control computer is operable to modify said at least one gain value  
as a function of said road condition signal.

51. The system of claim 50 wherein said condition of a road traveled by said  
vehicle corresponds to a grade of said road, said road condition signal corresponding to  
a road grade signal.

52. The system of claim 50 wherein said condition of a road traveled by said  
vehicle corresponds to a surface condition of said road, said road condition signal  
corresponding to a road surface condition signal.

53. The system of claim 46 further including an engine speed sensor  
30 producing an engine speed signal indicative of a rotational speed of said engine, said

control computer processing said engine speed signal to determine said measured engine speed value.

54. The system of claim 53 further including means for producing said throttle command, said throttle command corresponding to a fueling request.

55. System for controlling a fueling governor for an internal combustion engine, the system comprising:

means for determining one of a mass and a weight of a vehicle carrying an internal combustion engine and producing a corresponding mass or weight value; a fuel system responsive to a fueling signal to supply fuel to said engine; and a control computer including a fueling governor producing said fueling signal as a function of a throttle command and a measured engine speed value, said governor having at least one gain value associated therewith defining a responsiveness of said governor to changes in said throttle command to effectuate corresponding changes in said measured engine speed value via control of said fueling signal, said control computer modifying said at least one gain value as a function of said mass or weight value.

20 56. The system of claim 55 wherein said control computer is operable to modify said at least one gain value to increase said responsiveness of said governor as said mass or weight value increases and to modify said at least one gain value to decrease said responsiveness of said governor as said mass or weight value decreases.

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57. The system of claim 55 further including means for determining an acceleration rate of said vehicle;

and wherein said control computer is operable to modify said at least one gain value as a function of said acceleration rate.

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58. The system of claim 55 further including means for determining a condition of a road traveled by said vehicle and producing a road condition signal corresponding thereto;

5 wherein said control computer is operable to modify said at least one gain value as a function of said road condition signal.

10 59. The system of claim 58 wherein said condition of a road traveled by said vehicle corresponds to a grade of said road, said road condition signal corresponding to a road grade signal.

15 60. The system of claim 58 wherein said condition of a road traveled by said vehicle corresponds to a surface condition of said road, said road condition signal corresponding to a road surface condition signal.

20 61. The system of claim 55 further including an engine speed sensor producing an engine speed signal indicative of a rotational speed of said engine, said control computer processing said engine speed signal to determine said measured engine speed value.

25 62. The system of claim 61 further including means for producing said throttle command, said throttle command corresponding to a fueling request.

63. System for controlling a fueling governor for an internal combustion engine, the system comprising:

25 means for determining a condition of a road traveled by a vehicle carrying an internal combustion engine and producing a corresponding road condition signal;

a fuel system responsive to a fueling signal to supply fuel to said engine; and

30 a control computer including a fueling governor producing said fueling signal as a function of a throttle command and a measured engine speed value, said governor having at least one gain value associated therewith defining a responsiveness of said

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governor to changes in said throttle command to effectuate corresponding changes in said measured engine speed value via control of said fueling signal, said control computer modifying said at least one gain value as a function of said road condition signal.

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64. The system of claim 63 wherein said condition of a road traveled by said vehicle corresponds to a grade of said road, said road condition signal corresponding to a road grade signal.

10 65. The system of claim 64 wherein said control computer is operable to modify said at least one gain value to increase said responsiveness of said governor as said grade of said road increases if said grade of said road indicates an incline, and to modify said at least one gain value to decrease said responsiveness of said governor as said grade of said road decreases if said grade of said road indicates an incline.

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15 66. The system of claim 63 wherein said condition of a road traveled by said vehicle corresponds to a measure of roughness of said road, said road condition signal increasing in value as said measure of roughness of said road increases.

20 67. The system of claim 66 wherein said control computer is operable to modify said at least one gain value to increase said responsiveness of said governor as said road condition signal decreases, and to modify said at least one gain value to decrease said responsiveness of said governor as said road condition signal increases.

25 68. The system of claim 63 further including means for determining an acceleration rate of said vehicle;

and wherein said control computer is operable to modify said at least one gain value as a function of said acceleration rate.

69. The system of claim 63 further including an engine speed sensor producing an engine speed signal indicative of a rotational speed of said engine, said control computer processing said engine speed signal to determine said measured engine speed value.

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70. The system of claim 69 further including means for producing said throttle command, said throttle command corresponding to a fueling request.

71. System for controlling a fueling governor for an internal combustion engine, the system comprising:

an engine speed sensor producing an engine speed signal indicative of rotational speed of an internal combustion engine;

means for producing a throttle command indicative of a fueling request;

means for determining an operating condition associated with one of said engine and a vehicle carrying said engine and producing an operating signal corresponding thereto, said operating condition independent of said rotational speed of said engine and said throttle command;

a fuel system responsive to a fueling signal to supply fuel to said engine; and

a control computer including a fueling governor producing said fueling signal as a function of said throttle command and said engine speed signal, said governor defining an engine speed difference between a first value of said fueling signal corresponding to a no-load fueling condition and a second value of said fueling signal corresponding to a full-load fueling condition for any constant throttle command value, said governor having at least one gain value associated therewith defining a responsiveness of said governor to changes in said throttle command to effectuate corresponding changes in said rotational speed of said engine via control of said fueling signal, said control computer modifying said engine speed difference and said at least one gain value as a function of said operating condition signal.